

OPERATING INSTRUCTIONS

EchoTherm™

ANALOG MULTI-POSITION STIRRERS AND STIRRING HOT PLATES

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I. Introduction

Congratulations on your purchase of a Torrey Pines Scientific Multi-Position Stirrer or Stirring Hot Plate. You will find it easy to use and to maintain. Please read the instructions to insure that you receive the maximum benefit from it.

II. Warranty

Torrey Pines Scientific warrants this unit to be free from defects in material and workmanship for a period of one year from the date of purchase. If repair or adjustment is necessary within the one year period, and has not been the result of abuse or misuse, please return the unit, freight prepaid to us or the dealer from whom you purchased the unit, and correction will be made without charge. Out of warranty products will be repaired on a charge basis. Return authorization is needed before returning a unit.

III. Return of Items

Authorization must be obtained before returning items for any reason. When applying for authorization, please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Torrey Pines Scientific will not be liable for damage resulting from careless or insufficient packing. A 15% restocking charge will be made on all unauthorized returns. **Note:** Torrey Pines Scientific reserves the right to make improvements in design, construction and appearance without notice.

IV. Labels and Symbols

There are various labels on the body of these units. Listed below are the labels and their Meanings.

This symbol means: **Attention. The instruction manual is to be consulted for further information. Attention. Lire ce manuel pour des informations complémentaires.**

This symbol means: **Warning. Hot surface. Attention. Surface chaude.**

This symbol means: **Ground or earth connections. Connexion á la terre.**

V. Cautions

Chemical

These units were not designed to be corrosion resistant. If corrosive chemicals are heated, take care to keep corrosive vapors produced out of the interior of the unit.

Heater Plate Surface

The HS15 and HS19 units are capable of temperatures in excess of 450°C at the plate surface. Touching the heated surface will cause severe burns. **USE EXTREME CAUTION AT ALL TIMES.** Never leave your hot plate accessible to others while it is hot. Never touch the heater surface unless you are absolutely certain that it is cool.

NOTE: DO NOT INSTALL THIS UNIT CLOSER THAN SIX (6) INCHES (15.24 CM) TO A WALL OF COMBUSTIBLE MATERIAL. ALSO, THIS UNIT IS NOT FOR USE WITH FLAMMABLE LIQUIDS. NE PAS INSTALLER Á MOINS DE 152 mm (6 PO) D'UNE PAROI EN MATÉRIAU COMBUSTIBLE.

Remember that the plate surface is ceramic glass. It is very rugged, but it can be broken if heavy objects are dropped on it. Try not to use sample containers that overlap the edges of the heater plate. The reflected heat may damage the silicon adhesive holding the heater plate in its cast aluminum frame.

Stirrers

Each stirrer position is capable of stirring solutions well beyond 1500 rpm. Stirring a sample rapidly can cause solutions to splash out of a vessel onto the surfaces around the unit including the user. Additionally, stirring too rapidly can cause the stir bar to break loose from the stirrer magnet and rattle around the vessel causing the vessel to walk off the heater plate surface and to spill the solution. The stirrers are open-loop. That means that there is no feedback circuit to maintain a constant stirring speed. As solutions heat, they often become less viscous causing the stirrer to run more rapidly. Always check the stirrer to be sure it is set at the speed you require to mix a solution safely.

The **5-position** stirrers can hold **5-800ml glass beakers** or other vessels of about that diameter. There are stirrer positions in the middle of the heater top and toward the four corners of the heater top. The **9-position** stirrers can hold **9-500ml glass beakers** or other vessels of about that diameter. There are stirrer positions in the middle, the four corners and the spaces between the four corners. They will appear in rows of three across the heater surface.

Electrical

These units are made in models that operate at 115 or 230 volts AC \pm 10%, 50 or 60 Hz. They can draw between 6 and 15 amps depending upon the model. Check the fuse label and the manufacture's label on the unit for specifics on your unit. Be certain that your voltage matches the unit. Check the voltage on the bottom label for the voltage setting on the unit. Be certain to use a three-wire, properly grounded AC input. Take the normal care and precautions one would use with any electrical appliance. Be careful to keep the AC line cord away from the heater plate surface. **Be certain to use a line cord of the same type and rating as the one supplied with the unit.**

The unit is fused. The fuse is in a drawer in the AC power module on the rear of the unit. If the unit will not heat or stir, the fuse may be open. The fuse can be checked by removing the AC line cord from the AC power input module, and removing the fuse drawer from its holder. To remove the drawer, use a small, straight screw driver and pry open the drawer. Note how it comes out so that it may be replaced easily. Replace with fuses of the same value as installed by the manufacturer. The fuse value will be on the fuse label next to the fuse module. **Caution: If fuses blow repeatedly, contact your dealer or the manufacturer. Attention. Si les fusibles sautent de manière répétitive, contacter votre distributeur habituel ou le fabricant.**

VI. Set-Up Parameters and Instructions

These units are very simple to use. Follow the instructions below for installation.

Note: The IPX (Index of Protection) rating for this unit is 0 as specified by the manufacturer.

Set Up Parameters

1. Ambient operating temperature range is from 5°C to 40°C.
2. Maximum altitude of operation should not exceed 2000 meters.
3. Maximum ambient operating relative humidity should not exceed 80% at 31°C decreasing linearly to 50% relative humidity at 40°C.

Set Up Instructions

1. Place the unit on a level, dry bench or surface.
2. Plug the unit into a properly grounded, three-wire outlet of proper voltage.
3. The power is supplied to the heater and stirrer separately through their individual controls.

Note: Do not use this equipment in any manner not specified by the manufacturer. *Note: Ne pas utiliser cet équipement si vous ne pouvez pas respecter les conditions d'utilisation spécifiées par le fabricant.*

Environmental Information

1. This unit is for installation category II.
2. This unit is rated pollution degree 2.
3. For the pollution category for decommissioning these units, check local code requirements. This unit carries a WEE label. What this means is that the unit cannot be thrown in the trash. It contains materials that require disposal in a proper disposal site like those for computers and other electronic equipment.

VII. Controls and Indicator Lamps

Heater Control and Indicator Lamp

The heater control is tied to the indicator lamp next to it. When the control is activated, the lamp will illuminate. The control itself has an OFF position and two quick set positions: HI and LO. Between high and low there is about 270° of rotation about the bottom of the dial that is infinite, that is, smooth and without detents.

The low setting will heat the plate surface to about 100°C. The high setting will heat the plate surface to about 450°C depending upon your local input line voltage. Any setting in between is attainable by turning the dial between LO and HI about the bottom axis of the dial.

Stirrer Controls

The stirrer controls have no indicator lamp. The controls have an OFF detent fully counter-clockwise. When turning the dial clockwise the off detent will click and the control will be active. As the control is turned clockwise, the stirrer will increase in speed.

On the **5-position** stirrer the middle knob/control is for the center stirrer on the heater top. The top 2 knobs/controls are for the back two stirrer positions. The bottom 2 knobs/controls are for the two positions closest to the front of the unit.



On the **9-position** stirrer, the pattern of stirrer controls is from the lower right to the upper left in 3 slanted rows. The right row of knobs/controls from bottom to top is for the stirrer positions on the right side of the heater top from front to back. The center row of knobs/controls from bottom to top is for the middle stirrer positions from front to back. The left row of controls/knobs from bottom to top is for the left side of the heater top from front to back.



Note: The stirrer will have a dead zone for about the first 90° of rotation. The stirrer will not start to run in this zone. That is because the stirrer motor will start to run more freely as it heats and breaks-in. This will cause the stirrer to run faster until the motor warms-up. Leaving this dead zone allows the user to turn-down the speed of the stirrer as the stirrer motor warms-up. Be certain to observe the stirrer for a while after initial setting to avoid having the stirrer motors run too rapidly.

VIII. Cleaning and Maintenance

This unit is subject to splashes and spills. Be sure to clean all spills quickly. The adhesive that holds the ceramic glass heater surface is a silicone-based adhesive that may be attacked or discolored by acids or bases. Quick clean up of spills will prevent damage. Wipe spills with a soft cloth or paper towel. If a cleaning solution is necessary, use a mild soap or detergent solution and a soft cloth. **Be sure not to use solvents. They could damage the paint and labels. Don't use decontamination or cleaning agents that could cause a hazard as a result of a reaction with parts of the equipment or material contained in it. Contact the manufacturer or agent if there is any doubt about compatibility of decontamination or cleaning agents.**

Cleaning the glass heater top is equally simple. Use any slightly abrasive cleaner used on glass surfaces and a paper towel or soft cloth.

CAUTION: DO NOT ATTEMPT TO CLEAN THE HEATER SURFACE WHEN IT IS HOT. BURNS COULD OCCUR.

PRÉCAUTION D'EMPLOI: NE PAS NETTOYER LA SURFACE DE LA PLAQUE LORQU'ELLE EST CHAUDE POUR ÉVITER TOUTE BRÛLURE ACCIDENTELLE.

Maintenance

There is no preventative maintenance required on these units other than to keep them clean. All components are solid state and will work until they fail. If they fail, they can be replaced easily. A simple inspection should be done whenever the unit is to be used. This simple inspection should include:

1. Checking that the AC cord is not frayed or burned.
2. Checking that the unit is not dirty to a point where proper performance is impaired.

Be certain to store the unit properly, when not in use, in an area that will not have items placed on top of the unit, and covered in a way that will keep dirt and other foreign bodies out of the unit.

There are no devices or systems for over temperature protection. No checks for this type system are necessary.

Spare and Consumable Parts

There are very few spare or consumable parts necessary. A simple list is below.

<u>Part Number</u>	<u>Description</u>
730-0001	Power Cord, US
730-0006	Power Cord, German (European)
730-0008	Power Cord, UK
730-0004	Power Cord, Italian
730-0005	Power Cord, Australian
380-0003	Fuse, 8 amp, 125 volt
380-0005	Fuse, 4 amp, 250 volt

IX. ADDITIONAL SYMBOLS

The following are additional symbols found on the labels of the instrument.

<u>Symbol</u>	<u>Description</u>
V	Voltage
~	Alternating Current
A	Current
Hz	Frequency
W	Power
F	Fast Acting Fuse

Trash can with line across it WEE label. Do not throw the unit in the trash for disposal.